

Re: Senate Bill 471

Low Carbon Fu

SENATE HIGHWAYS AND TRANSPORTATION

EXHIBIT NO.

11

DATE:

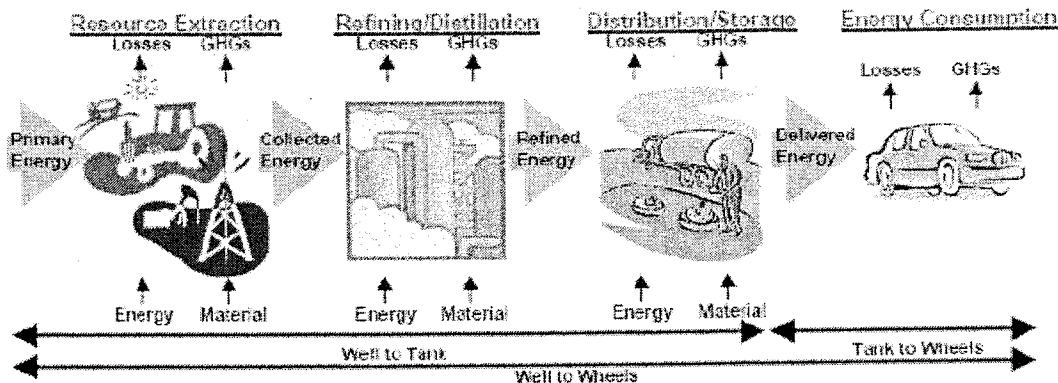
2/19/09

BILL NO.

SB471

A Low Carbon Fuel Standard (LCFS) calls for policy that objects alternative fuels based on the net amount of carbon they emit per standard ensures better accounting of fuel and policy impacts economically. It creates a policy infrastructure to promote our rural and reduced carbon intensity of transportation fuels. It measures what comes out of our exhaust pipe, but also the carbon produced elsewhere. Accounting considers all the energy inputs of a fuel: extra transportation to the pump. This accounting system tracks the indi

Low Carbon Fuel Standard Reduce the Life-cycle carbon intensity of fuels



Source: *The Future of Biofuels in Minnesota*, by Bill Grant, Izaak Walton League. Presentation November 13, 2008.

Lifecycle Accounting

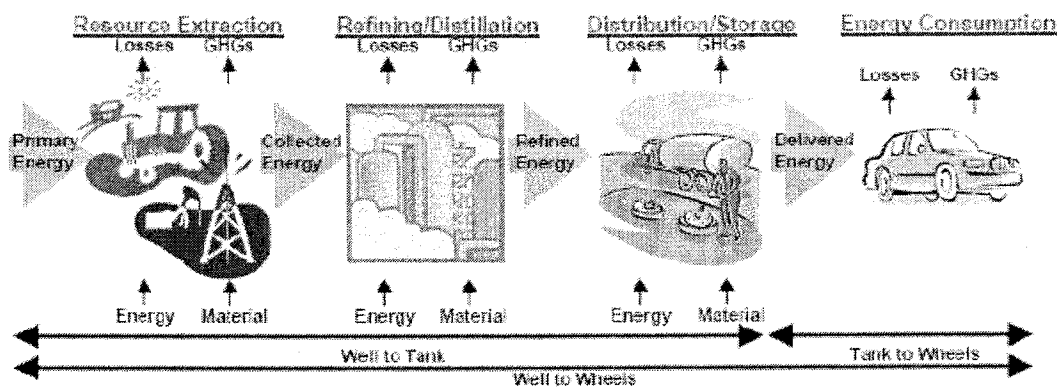
Lifecycle analyses must contend with the fact that inputs and assumptions generally represent industry-wide averages even though energy consumed and emissions generated can vary widely from one facility or process to another. Thus, greenhouse gas emissions can vary depending on each of these factors and the assumptions made about those factors. For example, renewable and alternative fuel production plants can utilize different processes and be powered with biomass, natural gas, coal or a mix of these fuels. Similarly, greenhouse gas emissions from alternative fuels like hydrogen depend on the fuel used to make the hydrogen. The combustion, or use of these fuels in vehicles, is another factor that influences lifecycle greenhouse gas emissions. For example, electric vehicles can have much higher fuel efficiency, improving the lifecycle greenhouse profile of electricity as a fuel.

THE STUDENT ADVOCATES FOR VALUING THE ENVIRONMENT (S.A.V.E) FOUNDATION
MORE INFORMATION AT SAVEMOBILE.ORG/406.449.6008

Low Carbon Fuels

A Low Carbon Fuel Standard (LCFS) calls for policy that objectively measures the benefits of alternative fuels based on the net amount of carbon they emit per unit of energy they provide. This standard ensures better accounting of fuel and policy impacts, both environmentally and economically. It creates a policy infrastructure to promote our rural economies, energy independence, and reduced carbon intensity of transportation fuels. It measures carbon emissions not just by what comes out of our exhaust pipe, but also the carbon produced over the lifetime of the fuel. LCF Accounting considers all the energy inputs of a fuel: extraction or growing, refining, and transportation to the pump. This accounting system tracks the indirect costs that we pay for fuel.

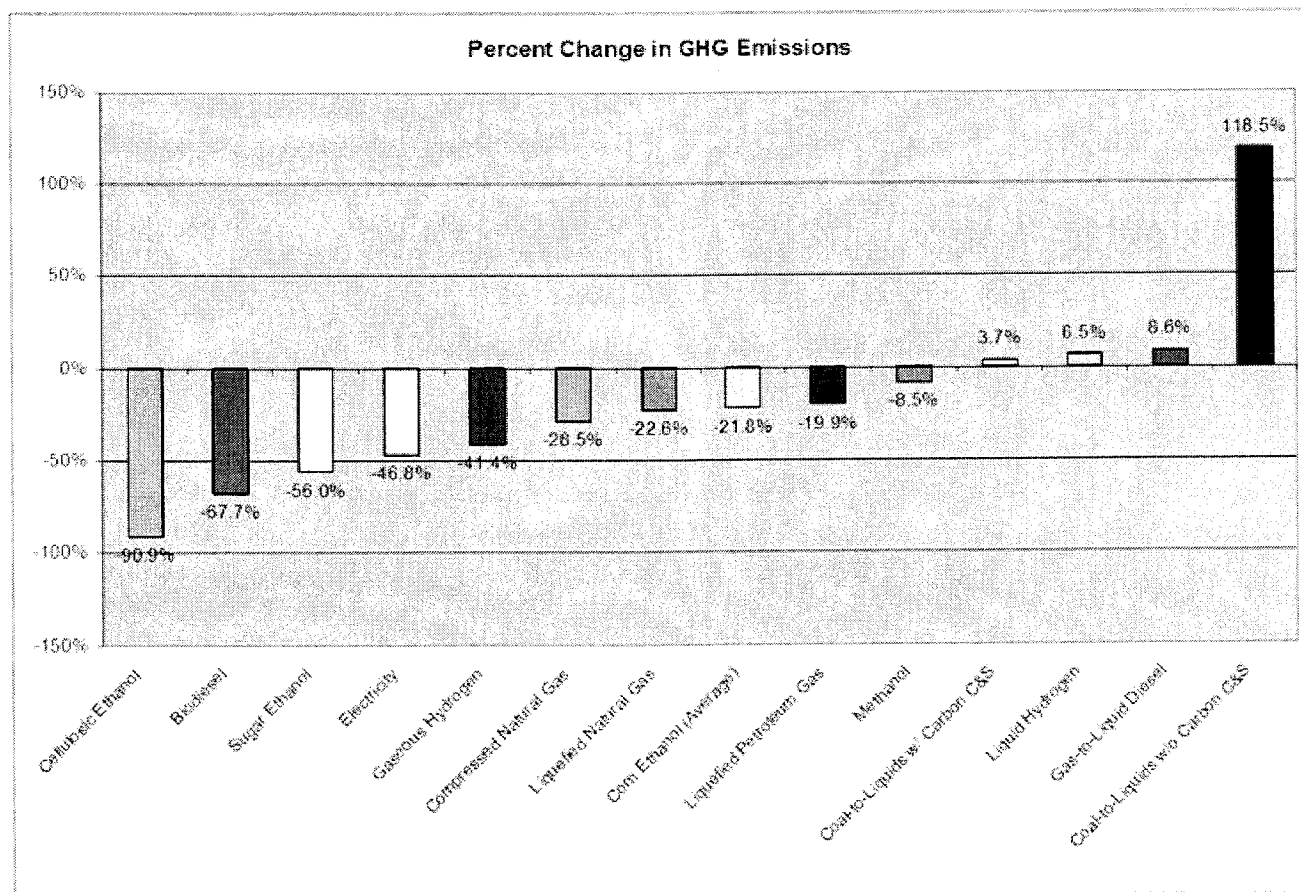
Low Carbon Fuel Standard: Reduce the Life-cycle carbon intensity of fuels



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Lifecycle Accounting

Lifecycle analyses must contend with the fact that inputs and assumptions generally represent industry-wide averages even though energy consumed and emissions generated can vary widely from one facility or process to another. Thus, greenhouse gas emissions can vary depending on each of these factors and the assumptions made about those factors. For example, renewable and alternative fuel production plants can utilize different processes and be powered with biomass, natural gas, coal or a mix of these fuels. Similarly, greenhouse gas emissions from alternative fuels like hydrogen depend on the fuel used to make the hydrogen. The combustion, or use of these fuels in vehicles, is another factor that influences lifecycle greenhouse gas emissions. For example, electric vehicles can have much higher fuel efficiency, improving the lifecycle greenhouse profile of electricity as a fuel.



Source: *Greenhouse Gas Impacts of Expanded Renewable and Alternative Fuels Use*. EPA Fuels and Additives Site. Retrieved February 4, 2009 from <http://www.epa.gov/OMS/renewablefuels/420f07035.htm>

The GREET Model

The EPA used the Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) model of lifecycle analysis to estimate the percent change in lifecycle greenhouse gas emissions, relative to the petroleum fuel that is displaced, of a range of alternative and renewable fuels and then compared them on an energy equivalent basis. Under this analysis, a typical existing starch-ethanol plant qualifies under the Energy Independence and Security Act (EISA) regulations; the EPA found that for every British thermal unit (Btu) of gasoline that is replaced by corn ethanol, the total lifecycle greenhouse gas emissions that would have been produced from that Btu of gasoline would be reduced by 21.8 percent. The percent change in greenhouse gases for corn ethanol can range from a 54 percent decrease for a biomass-fired dry-mill plant to a 4 percent increase for a coal-fired wet-mill plant. Sugar ethanol, which is considered an advanced biofuel in EISA, had a 56 percent reduction and cellulosic ethanol had a 90.9 percent reduction.

Economic Benefits of Biofuels for Montana

Biodiesel is renewable. It can be blended into existing petroleum diesel or used as a petroleum diesel substitute. According to the U.S. Department of Energy, biodiesel blends require no engine modifications—you can use them in existing diesel engines. Biodiesel is much less combustible than petroleum diesel, making it safer to handle. It reduces greenhouse gas emissions. It is approved for use as a registered fuel and fuel additive by the Environmental Protection Agency and has been designated as an alternative fuel by the Department of Energy and the U.S. Department of Transportation. Biodiesel has been tested in a variety of unmodified diesel vehicles for 40 million road miles, including 120,000 miles in Yellowstone National Park. Biodiesel can be produced from certain varieties of canola, safflower, mustard, camelina, and crambe, all which can be grown here in Montana. Growing the raw materials in Montana and refining and producing biodiesel in Montana may be a value-added proposition that has the potential to create jobs, revitalize rural Montana's economy, and promote alternative fuel development.

LOW CARBON FUELS

BY MATT ELSAESSER

Every gallon we buy at the pump affects our environmental, economic, and national security. A significant percentage of our transportation fuel is shipped across oceans and supports unsavory regimes. All of it emits climate-harming carbon into the atmosphere. Our choice at the pump is neither simple, nor consequence free. Reducing these consequences starts with driving less, choosing fuel efficient cars and trucks, and selecting the right alternative fuels. When we select alternative fuels, it is vital that we see a full accounting of their environmental merit. This can best be done through Low Carbon Fuel (LCF) accounting as recommended by the Montana Climate Change Advisory Committee. LCF Accounting includes all "energy inputs and carbon outputs from production to consumption" in transportation fuel. In other words, policies regarding alternative fuels should promote increased efficiency and decreased carbon intensity.

LCF Accounting is the best way to determine which alternative fuels have environmental merit. It measures carbon emissions not just by what comes out of our exhaust pipe, but also the carbon produced over the lifetime of the fuel. LCF Accounting considers all the energy inputs of a fuel: extraction or growing, refining, and transportation to the pump. This accounting system tracks the indirect costs that we pay for fuel. A gallon of petroleum gasoline produced in Montana provides the same amount of useful energy as a gallon of petroleum derived gas from the Middle East.

Decreasing the Carbon intensity of our fuel brings forth fuels that have economic and environmental merit. It ensures policies on fuel can support local fuels that provide value added opportunity for our rural economy.

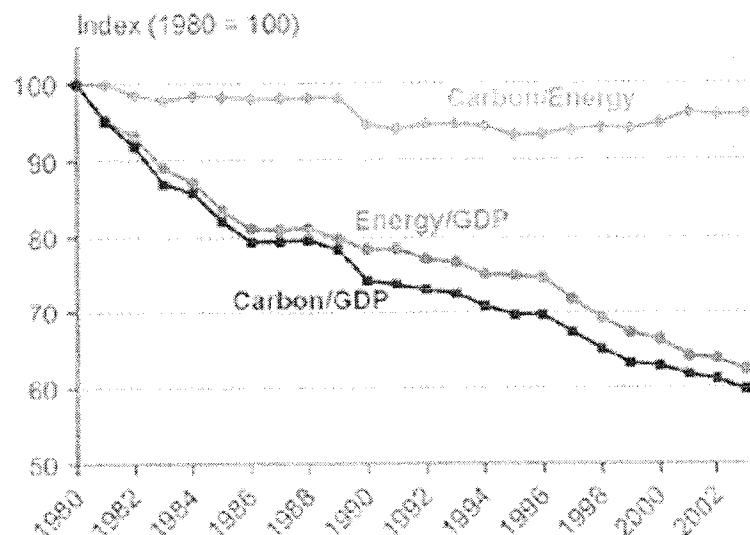
.....However, the Middle East gallon will have taken much more energy and emitted more carbon because of transportation. The resulting measurement gives us the "carbon intensity" of the fuel we are putting into our vehicles, telling us how much carbon was emitted to yield a set amount of energy at the pump

The nation is looking for alternatives to gasoline. Recent reports regarding Hydrogen Fuel Cells have created much excitement. Liquid biofuels like ethanol and biodiesel have the potential to allow America to grow its own fuel, which in turn will reduce fuel costs, greenhouse gas emissions, and dependence on foreign nations for fuel. However, not all alternative fuels are created equal and many have unintended consequences. Corn-based ethanol requires energy from fossil fuels. In Asia, rainforests are destroyed to provide cropland for biodiesel made from palm oil, causing the loss of "carbon sinks" and biodiversity. Today, using electricity to produce hydrogen for fuel cells is less efficient than using the electricity directly in a standard electric car. LCF Accounting is a tool that can ascertain which alternative fuels being promoted are those with real environmental benefits.

LCF Accounting gives us a necessary baseline to understand the environmental impacts of our transportation fuel choices. It is a vital tool for citizens making choices at the pump and for policy makers looking to lower the carbon intensity of fuels. Fueling your car is not simple. The true costs are often hidden. Let's make it easier with Low Carbon Fuels Accounting.

(This article ran as "The Real Cost of Fuel" on Feb. 27 in the Queen City News and on Feb 28 in the Helena Independent Record as "On Low Carbon Fuel Accounting.")

Intensity Ratios: Carbon/GDP, Carbon/Energy, and Energy/GDP



Our economy has grown relative to our energy use, yet we have not reduced the carbon intensity of the energy used.. (Source: EIA, 2004)



Example for Enthusiasm for Low Carbon Fuels Across Montana



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Biodiesel Montana Tours

By the S.A.V.E. Foundation

The S.A.V.E. Foundation has traveled more than 2,000 miles across the state to promote the economic and environmental potential of Biodiesel for Montana. The tours have included a series of free concerts at restaurants, schools, and community colleges featuring the music of Singer/Songwriter Jason DeShaw of Plentywood and actual demonstrations on how to make Biodiesel.

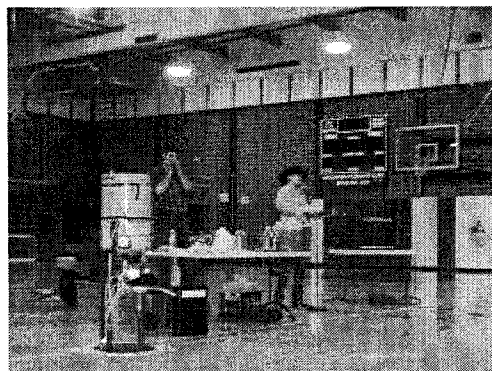
We have presented in dozens towns across Montana, including stops in Bozeman, Helena, Missoula, Great Falls, Winnett, Circle, Jordan, Sidney, Crow Agency, Lame Deer, Avon, Ingomar, Livingston, Miles City, Box Elder, Roundup, and Havre, where the university has recently added a biodiesel testing facility.



Biodiesel Montana educated farmers in Ingomar about the benefits of growing their own fuel.



Rancher Andy Brown explains the details of the fuel lines outside Little Big Horn College.



Country singer Jason Deshaw entertains grades 7-12 in Harlowton.



The S.A.V.E. Foundation, 501(c)(3)
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